

REMARKS

This Application has been carefully reviewed in light of the Office Action mailed December 6, 2000. In order to advance prosecution of this Application, Claims 1, 2, and 15 have been amended. Applicant respectfully requests reconsideration and favorable action in this case.

Claims 1-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lathrop, et al. in view of Ohazama. Independent Claims 1, 10, and 15 recite in general the ability to determine a pixel value from texture values of selected parameters and from unselected parameters which are not texture values. By contrast, the Lathrop, et al. patent does not use unselected parameters in determining a pixel value as required by the claimed invention. The Lathrop, et al. patent generates illumination values and texture parameter values from a small number of selected initialization values but never uses the unselected initialization values in generation of its final bitmap values. The Examiner uses the Ohazama patent to support the use of unselected parameters in determining pixel value. However, the Ohazama patent does not mention anything about using unselected parameters in such a manner. The portion of the Ohazama patent cited by the Examiner merely discusses an example of maintaining lighting values constant within a scene when a new graphics object enters the scene. The Ohazama patent goes on to show the disadvantage of such a scenario and thus teaches away from its use. Thus, not only does neither the Lathrop, et al. patent nor the Ohazama patent mention the use of unselected parameters in determining pixel value as required by the claimed invention but also the Ohazama patent teaches away from any possible combination with the Lathrop, et al. patent. Therefore, Applicant respectfully submits that Claims 1-20 are

patently distinct from the proposed Lathrop, et al. - Ohazama combination.

Applicant has now made an earnest attempt to place this Application in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicant respectfully requests reconsideration and full allowance of Claims 1-20.

An extension of two (2) months is hereby requested and a Notification of Extension of Time Under 37 C.F.R. §1.136(a) and appropriate fee is attached herewith

The Commissioner is hereby authorized to charge any amount required or credit any overpayment to Deposit Account No. 02-0384 of BAKER BOTTS L.L.P.



Respectfully submitted,  
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MARKED UP VERSION OF SPECIFICATION AND CLAIM AMENDMENTS

For the convenience of the Examiner, all claims have been presented whether or not an amendment has been made. The specification and claims have been amended as follows:

IN THE CLAIMS

1. (Amended) In a computer graphics system, a method for applying texture mapping in per-pixel operations, the method comprising:

receiving a plurality of parameters that define a pixel value at a pixel in a primitive;

selecting a set of parameters from the plurality of parameters, the selected set of parameters being associated with texture values, one parameter per texture value, the parameters that are not selected defining a set of unselected parameters that have constant values over the primitive;

determining a texture value for each of the selected parameters by accessing a set of textures, the texture value for the selected parameters varying over the primitive; and

determining [evaluating] the pixel value by using the unselected parameters and the texture values, wherein the set of unselected parameters are not texture values and the texture values are associated with the selected parameters.

2. (Amended) The method as recited in claim 1, further comprising:

displaying the [generated] pixel [light] according to the determined pixel value on a display device.

3. The method as recited in claim 1, wherein the plurality of parameters includes per-primitive parameters, which are defined over the entire primitive.

4. The method as recited in claim 1, wherein the primitive is a polygon.

5. The method as recited in claim 1, wherein the plurality of parameters includes both scalar and vector parameters.

6. The method as recited in claim 3, wherein the plurality of parameters includes one or more of emission material color, ambient material color, global ambient light color, attenuation factor, ambient light color, diffuse material color, diffuse light color, specular material color, specular light color, a surface normal vector, a specular exponent, an environment map color, and a shadow color.

7. The method as recited in claim 1, wherein the operation of determining the texture value further comprises the operations of:

receiving texture coordinates for accessing the set of textures; and

accessing the textures in response to the texture coordinates to generate the texture values.

8. The method as recited in claim 7, wherein the accessed texture includes a plurality of texture elements, the method further comprising the operation of:

filtering the accessed texture elements of the texture map onto the selected pixel to generate the texture value associated with the pixel.

9. The method as recited in claim 1, wherein a light value is generated for the pixel value by evaluating a lighting equation that is defined in terms of the plurality of parameters.

10. A device for generating per-pixel values of pixels in a primitive by using texture parameters, the pixel values of the pixels in the primitive being defined by a plurality of parameters, the device comprising:

a texture memory for storing a set of texture maps;

a texture unit for receiving texture coordinates for accessing a set of selected texture maps in the texture memory, the set of selected texture maps being associated with a set of selected parameters selected from among the plurality of parameters that define a pixel value in the primitive, the texture unit generating a texture value associated with the pixel from each of the selected texture maps, wherein the parameters that are not selected from the plurality of parameters define a set of unselected parameters; and

a rendering unit for generating the pixel value in response to the texture values of the selected parameters and to the unselected parameters.

11. The device as recited in claim 10, wherein the primitive is a polygon.

12. The device as recited in claim 10, wherein one or more of the selected parameters are selected from a parameter group consisting of emission material color, ambient material color, global ambient light color, attenuation factor, ambient light color, diffuse material color, diffuse light color, specular material color, specular light color, a surface normal vector, a specular exponent, an environment map color, and a shadow color.

13. The device as recited in claim 10, wherein the plurality of parameters includes both scalar and vector parameters.

14. The device as recited in claim 10, wherein the pixel value is a light value that is generated by evaluating a lighting equation using the plurality of parameters.

15. (Amended) A computer graphics system for generating per-pixel values for pixels in a primitive by using texture parameters, the pixel values being defined by a plurality of parameters, the system comprising:

a processor coupled to a bus;

a main memory coupled to the bus;

a storage unit coupled to the bus; and

a graphics subsystem coupled to receive a plurality of parameters defining the pixel values for the pixels in the primitive, the graphics subsystem including:

means for selecting a set of parameters from the plurality of parameters, the selected set of parameters being associated with texture values, one parameter per texture value, the parameters that are not selected defining a set of unselected parameters that have constant values over the primitive;

means for determining a texture value for each of the selected parameters by accessing a set of textures, the texture value for the selected parameters varying over the primitive; and

means for determining [evaluating] the pixel value by using the unselected parameters and the texture values, wherein the set of unselected parameters are not texture values and the texture values are associated with the selected parameters.

16. The system as recited in claim 15, wherein one or more of the selected parameters are selected from a parameter group consisting of emission material color, ambient material color, global ambient light color, attenuation factor, ambient light color, diffuse material color, diffuse light color, specular material color, specular light color, a surface normal vector, a specular exponent, an environment map color, and a shadow color.

17. The system as recited in claim 15, wherein the plurality of parameters includes both vector and scalar parameters.

18. The system as recited in claim 15, wherein the pixel value is a light value that is generated by evaluating a lighting equation using the plurality of parameters.

19. The system as recited in claim 15, wherein the primitive is a polygon.

20. The system as recited in claim 15, wherein the means for determining a texture value filters the accessed set of textures to generate the texture values.